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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/656,497

09/05/2003

Mansoor Ali Khan Alicherry

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8348

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12/07/2007

EXAMINER

PHAN, MAN U

ART UNIT

PAPER NUMBER

2619

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/656,497

Applicant(s)

ALICHERRY ET AL.

Examiner

Man Phan

Art Unit

2619

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 6-10 and 22-26 is/are allowed.
- 6) ☒ Claim(s) 1-5, 11-21, 27-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

Response to Amendment and Argument

1. This communication is in response to applicant's 9/18/2007 Amendment in the application of Alicherry et al. for the "Routing and design in K-shared network" filed 09/05/2003. The amendment and response has been entered and made of record. Claims 6, 22, have been amended. Claims 1-32 are pending in the application.
2. Applicant's remarks and argument to the rejected claims are insufficient to distinguish the claimed invention from the cited prior arts or overcome the rejection of said claims under 35 U.S.C. 103 as discussed below. Applicant's argument with respect to the pending claims have been fully considered, but they are not persuasive for at least the following reasons.
3. In response to Applicant's argument that the reference does not teach or reasonably suggest the functionality upon which the Examiner relies for the rejection. The Examiner first emphasizes for the record that the claims employ a broader in scope than the Applicant's disclosure in all aspects. In addition, the Applicant has not argued any narrower interpretation of the claim limitations, nor amended the claims significantly enough to construe a narrower meaning to the limitations. Since the claims breadth allows multiple interpretations and meanings, which are broader than Applicant's disclosure, the Examiner is required to interpret the claim limitations in terms of their broadest reasonable interpretations while determining patentability of the disclosed invention. See MPEP 2111. In other words, the claims must be given their broadest reasonable interpretation consistent with the specification and the

interpretation that those skilled in the art would reach. See *In re Hyatt*, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000), *In re Cortright*, 165 F.3d 1353, 1359, 49 USPQ2d 1464, 1468 (Fed. Cir. 1999), and *In re American Academy of Science Tech Center*, 2004 WL 1067528 (Fed. Cir. May 13, 2004). Any term that is not clearly defined in the specification must be given its plain meaning as understood by one of ordinary skill in the art. See MPEP 2111.01. See also *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989), *Sunrace Roots Enter. Co. v. SRAM Corp.*, 336 F.3d 1298, 1302, 67 USPQ2d 1438, 1441 (Fed. Cir. 2003), *Brookhill-Wilk 1, LLC v. Intuitive Surgical, Inc.*, 334 F.3d 1294, 1298 67 USPQ2d 1132, 1136 (Fed. Cir. 2003). The interpretation of the claims by their broadest reasonable interpretation reduces the possibility that, once the claims are issued, the claims are interpreted more broadly than justified. See *In re Prater*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). Also, limitations appearing in the specification but not recited in the claim are not read into the claim. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Therefore, the failure to significantly narrow definition or scope of the claims and supply arguments commensurate in scope with the claims implies the Applicant intends broad interpretation be given to the claims. The Examiner has interpreted the claims in parallel to the Applicant in the response and reiterates the need for the Applicant to distinctly define the claimed invention.

In response to Applicant's argument that there is no suggestion to combine the references, i.e., Gunluk (US#7,023,806) and Chen et al. (US#7,058,012) as proposed in the office action. The Examiner recognizes that references cannot be arbitrarily combined and that there must be some reason why one skilled in the art would be motivated to make the proposed combination of primary and secondary references. *In re Nomiya*, 184 USPQ 607 (CCPA 1975).

However, there is no requirement that a motivation to make the modification be expressly articulated. The test for combining references is what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art. *In re McLaughlin*, 170 USPQ 209 (CCPA 1971). It must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to Applicant's argument regarding claims 16 and 32 rejected under 35 USC 101. In view of Applicant's disclosure, the "*designing a K-shared network based on a set of one or more demands*" and the "*computing candidate*", "*linear program formulation*" is not limited to tangible embodiments, instead being defined as including both tangible embodiments and intangible embodiments. As such, the claim is not limited to statutory subject matter and is therefore non-statutory. The claims appear to be nothing more than a signal not tangibly embodied in a manner so as to be executable and thus non-statutory for failing to be in one of the categories of invention. It's not tangibly embodies and non-functional descriptive material - data per se. Therefore, what applicant is attempting to claim as a program product or data record as is known in the art. The claim is actually drawn to non-functional descriptive material stored on a medium. The description given in the specification does not cure this problem. In practical terms, claims define non-statutory processes if they simply manipulate abstract ideas, e.g., a bid or a bubble hierarchy, without some claimed practical application, *Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59; *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759.

The Supreme Court has repeatedly held that abstractions are not patentable. "An idea of itself is not patentable". Rubber-Tip Pencil Co. V. Howard, 20 Wall. 498, 07. Phenomena of nature, though just discovered, mental processes, abstract intellectual concepts are not patentable, as they are the basic tools of scientific and technological work Gottschalk v. Benson, 175 USPQ 673,675 (S Ct 1972). It is a common place that laws of nature, physical phenomena, and abstract ideas are not patentable subject matter Parker v. Flook, 197 USPQ 193,201 (S Ct 1978). A process that consists solely of the manipulation of an abstract idea is not concrete or tangible. See In re Warmerdam, 33 F.3d 1354, 1360, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). See also Schrader, 22 F.3d at 295, 30 USPQ2d at 1459. Since Claims 16 and 32 are directed to abstract idea that do not produce a physical transformation in a practical application producing a concrete, useful, and tangible result to form the basis of statutory subject matter under 35 U. S. C. 101. Applicant (s) is/are advised to amend the claims by specifying the claims being directed to a practical application and producing a tangible result.

Since no substantial amendments have been made and the Applicant's arguments are not persuasive, the claims are drawn to the same invention and the text of the prior art rejection can be found in the previous Office Action. Therefore, the Examiner maintains that the references cited and applied in the last office actions for the rejection of the claims are maintained in this office action.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 16 and 32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. With respect to exemplary independent claims 16 and 32, they are an abstract idea, as a disembodied mathematical algorithm. Independent claims 16 and 32 don't not result in a physical transformation outside of a computer. There is always some form of physical transformation within a computer because a computer acts on signals and transforms them during its operation and changes the state of its components during the execution of a process. Even though such a physical transformation occurs within a computer, such activity is not determinative of whether the process is statutory because such transformation alone does not distinguish a statutory computer process from a nonstatutory computer process. What is determinative is not how the computer performs the process, but what the computer does to achieve a practical application. See MPEP 2106 IV (B) (2) (b) (ii). A claim is limited to a practical application when the method, as claimed, produces a concrete, tangible and useful result; i.e., the method recites a step or act of producing something that is concrete, tangible and useful. See MPEP 2106 IV (B) (2) (b) (ii). 6. Independent claims 16 and 32 are directed towards an automated method and apparatus of "designing a network" as recited in the preamble. Within the claim language itself, a step of "computing candidate paths" is performed by determining one or more "demands" and also applying "an integer linear program" for using network equipment within the network. What is not disclosed by the claim is how these determined values are subsequently used in the actual design of a network and therefore are deemed nonstatutory for not producing something that is concrete, tangible and useful. The "computing" steps are deemed algorithmic steps of pure data manipulation which do not culminate into a concrete, tangible and useful result and furthermore it is unclear if there is any actual result from the method as

claimed. Even further, the step of "applying an integer linear program formulation" does not yield a real world result and is equitant to "thinking about a network". The claim is actually drawn to non-functional descriptive material stored on a computing program medium. The description given in the specification does not cure this problem. In practical terms, claims define non-statutory processes if they simply manipulate abstract ideas, e.g., a bid or a bubble hierarchy, without some claimed practical application, *Schrader*, 22 F.3d at 293-94, 30 USPQ2d at 1458-59; *Warmerdam*, 33 F.3d at 1360, 31 USPQ2d at 1759.

6. Claims 16 and 32 are also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a specific asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 1-5, 11-15 and 17-21, 27-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gunluk (US#7,023,806) in view of Chen et al. (US#7,058,012).

With respect to claims 1-5, 15 and 17-21, 31, the references disclose a novel system and method for determining a route for a demand in a network routing, according to the essential features of the claims. Gunluk (US#7,023,806) discloses a method of determining a route for transmitting signals through a network. The method comprises obtaining and storing network and demand data. Network data may include, for example, link type data, spare capacity data, vendor data, and common mileage data (representing the network). Demand data may include, for example, origination node data, termination node data, and diversity requirement data. The demand data is then processed using a shortest path routing method to obtain an initial route and the network data is updated. An initial cost based on the initial route is computed (See Fig. 1; Col. 2, lines 20 plus and Col. 3, lines 9 plus). Gunluk (US#7,023,806) further teaches in Fig. 2 a flow diagram of a method 200 for routing demands in accordance with the present invention. Method 200 begins with obtaining the input demand and network data described above (step 202). The network data described above is processed to construct a representation of the network and relevant data structures are populated (step 204). Demands T are then individually routed (decision 206). If a demand T.sub.j has already been routed on route R.sub.j and is required to be diverse from T.sub.i, i.e., T.sub.j is included in D.sub.i, the links of R.sub.j should be marked or

identified in some manner (step 208). Demand $T_{sub.i}$ is then routed on route $R_{sub.i}$ using a shortest path algorithm (step 210). Route $R_{sub.i}$ is stored (step 212). The network representation originally stored in step 204 is then updated to reduce the link capacities used in route $R_{sub.i}$ (step 214). This process is repeated until there are no more demands $T_{sub.i}$ (decision 206). The initial cost of the solution for all demands is computed (step 216). A "specialized" shortest path algorithm is provided to find the shortest path for each demand $T_{sub.i}$ that will increase the overall cost least, while maintaining the other routes fixed. This specialized shortest path algorithm is referred to as the Constrained Diverse Shortest Path Method (CDSPM) and is set forth in detail in Fig. 3. The shortest route $R_{sub.i}'$ from origination node $A_{sub.i}$ to termination node $Z_{sub.i}$ is determined using a known shortest path algorithm to route demand $T_{sub.i}$ (step 308). Once route $R_{sub.i}'$ is established, the diversity requirements and OT constraints are checked to see if route $R_{sub.i}'$ violates them (decision 310). If route $R_{sub.i}'$ does not violate them, then the route is acceptable and is provided to the routing method of Fig. 2, e.g., at step 226 (step 312). CDSPM is complete (Col. 8, lines 34 plus).

In the same field of endeavor, Chen et al. (US#7,058,012) teaches a system for automatic end-to-end path provisioning for an optical network utilizing a network management system, wherein the least cost path is the shortest path based on the number of network element hops. The system for automatic end-to-end path provisioning for an optical network by a network management system generally comprises an input device for obtaining path parameters for each network element of the network and a processor for automatically performing discovery of paths including determine connection possibilities based upon the path parameters and for automatically provisioning an end-to-end STS-n path based on the paths resulting from the

discovery, wherein the automatic provisioning includes selecting a least cost path from the discovered paths and setting the least cost path as the working path, and wherein the least cost path is the shortest path based on the number of network element hops (See Fig. 6; Col. 2, lines 31 plus and Col. 7, lines 42 plus).

Regarding claims 11-14 and 27-30, Chen further teaches in Fig. 8 is a flow chart illustrating an automatic path provisioning process 800. At step 802, the network management system obtains path parameters such as from the administrator via the GUI. Examples of path parameters include bandwidth size, start NE, end NE, path trace, section trace, cross connect direction (one way or two way), pass through, and add-drop facility. In particular, the network management system checks load information and available bandwidth information of scheduled cross connection for each NE. The network management system may also check for connection possibilities. According to one preferred embodiment, the network management system may query each NE to determine if the NE has the appropriate bandwidth and facility for the end-to-end path to be provisioned. Next, at step 804, the network management system performs automatic discovery of paths based on the links, cross connection, equipment, facilities and availability information for the NEs as obtained in step 802. The network management system optionally builds a list of all connection possibilities for the end-to-end path. In one embodiment, the system then selects the shortest or otherwise least-cost path as the working path and the second shortest or least-cost path as the protection path. It is noted that for the BLSR protection scheme, the system only provisions the working path and, in the event of error, fault, or other failure, the ring map stored by each NE is utilized to determine the protection path such that each

NE determines the next hop in the event of error or fault (Col. 2, lines 40 plus and Col. 9, lines 11 plus).

One skilled in the art of communications would recognize the need for determining a route for a demand in a network routing, and would apply Chen's novel use of the automatic end to end paths for SONET networks into Gunluk's method of routing signals over an optical network while satisfying diversity requirements and other network constraints. Therefore, It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to apply Chen's systems and methods for automatic end to end path provisioning for SONET networks into Gunluk's method for routing optical; signals with diversity requirements with the motivation being to provide a system and method for routing and design in K-shared network.

Allowable Subject Matter

10. Claims 6-10 and 22-26 are allowable .

11. The following is an examiner's statement of reasons for the indication of allowable subject matter: The closest prior art of record fails to disclose or suggest wherein a pair of channels may be represented as $l.\text{sup}.i$ and $m.\text{sup}.j$ incident on a node u such that the channel connectivity representation step further comprises: when the pair of channels are already connected at u , adding a zero-cost edge between $u(l, i)$ and $u(m, j)$; and otherwise, when both of the channels have degrees less than a value K at u , connecting them with an edge having a cost ϵ , where ϵ is greater than zero and substantially smaller than one, as specifically recited in the claims.

12. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION THIS ACTION IS MADE FINAL**. See MPEP '706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Phan whose telephone number is (571) 272-3149. The examiner can normally be reached on Mon - Fri from 6:00 to 3:00.

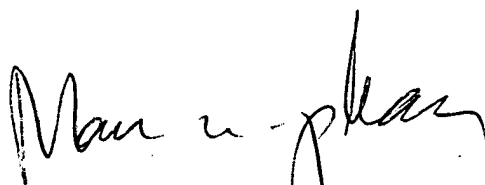
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel, can be reached on (571) 272-2988. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571) 272-2600.

15. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at toll free 1-866-217-9197.

Mphan

Dec. 06, 2007

A handwritten signature in black ink, appearing to read 'Man U. Phan', written in a cursive style.

MAN U. PHAN
PRIMARY EXAMINER